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CLAIMS

(57) [Claim(s)]

[Claim 1] An image reading means to read the image of a manuscript, and the transfer paper conveyance device in which a transfer paper is conveyed, The body of image formation equipment which has the image formation section formed in the transfer paper which has had the image read with said image reading means conveyed inside, It has the manuscript transport device prepared in the upper part of said body of image formation equipment. Said manuscript transport device The installation base in which it is prepared free [closing motion] to said body of image formation equipment, and a manuscript is laid, It evacuates so that conveyance of a manuscript may not be barred, where said installation base is closed, the conveyance device in which the manuscript laid in said installation base is conveyed. It has the safety catch device in which it prevents that a manuscript falls from said installation base with open actuation of said installation base where said installation base is opened wide. Said installation base can be freely opened and closed independently with said conveyance device. Said safety catch device The revolving shaft supported by the conveyance direction downstream edge of said installation base free [rotation], The 1st location which can contact the edge of the manuscript pivotable [with said revolving shaft] and laid in said installation base, Image formation equipment which has the safety catch member which can take the 2nd location which does not contact the edge of a manuscript, the energization member which energizes said safety catch member to said 1st location side, and the specification-part material which locates said safety catch member in said 2nd location where said installation base is closed.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Field of the Invention] This invention relates to sheet member transport devices, such as a sheet member transport device and an automatic manuscript transport device especially installed in the upper part of image formation equipment. In the equipment with which the installation base in which sheet members, such as a manuscript, are laid is formed free [closing motion] in more detail, when an installation base is opened wide, it is related with the safety catch device in which it prevents that a manuscript etc. falls from an installation base.

[Description of the Prior Art] Conventionally, in image formation equipments, such as facsimile and a copying machine, what arranged the automatic manuscript transport device (sheet member transport device) in the upper part of an image formation equipment body is offered. An example of this kind of image formation equipment is shown in drawing 7 . As for the equipment shown in drawing 7 , the automatic manuscript transport device (it is hereafter described as ADF equipment) is prepared in the upper part of a body 600. ADF equipment has the installation base 610 of a manuscript, and the conveyance device 620 prepared in the illustration right-hand side of the installation base 610. Moreover, the body 600 has the scanner 630 arranged down the installation base 610, the optical unit 640 arranged under the scanner 630, and the image formation section 650 arranged under the optical unit 640. The image formation section 650 has the photo conductor drum 651, and the photo conductor drum 651 develops the image of the manuscript exposed by the laser light outputted from the optical unit 640 in a toner image, and it imprints it to a transfer paper. The body 600 has the transfer paper feed section 660 which is arranged under the image formation section 650 and has a sheet paper cassette 661 further, the fixing section 670 arranged at the downstream of the transfer paper feed section 660, and the transfer paper discharge section 680 arranged at the downstream of the fixing section 670. It turns at a time to the image read station of the body of image formation equipment one manuscript loaded on the installation base 610 with feed means, such as a feed roller, and the conveyance device 620 of ADF equipment conveys it, and returns a manuscript on the installation base 10 after reading termination of a manuscript image. In recent years, the gestalt which an office network progresses with the spread of personal computers, and uses a printer for Maine in office is in use. The MARUCHIFANKUSHON printer (multi-functionalized) (image formation equipment) with which the demand of low-cost-izing of the device used in office space-saving-izing and, and office increases, consequently it has a printer and a facsimile function and a copy function has come [and] to be offered. The ADF equipment attached in such MARUCHIFANKUSHON image formation equipment is equipped also with the discharge base which usually loads again the manuscript discharged from an image read station with a manuscript installation base. And these installation bases and a discharge base are attached through the hinge device so that closing motion of those end side may be attained to the body of image formation equipment above. When manuscripts which copy the filed manuscript with thick thickness and which are case [manuscripts] or conveyed, such as a book manuscript, cause a paper jam by this, it can be operated by locating ADF equipment in an open position. In connection with multifunction ** of the above image formation equipments, the good thing of operability is further demanded by space-saving. Then, in order turn the discharge base of the transfer paper after image formation to the front-face side of a body, prepare in the installation base of ADF equipment, and parallel and to mitigate the operating physical force for closing motion of ADF equipment further,

the part in which the installation base and the discharge base were established, and the part in which a conveyance device was prepared separate, it constitutes and the equipment it enabled it to open and close only in the part in which the installation base and the discharge base were established is also offered.

[Problem(s) to be Solved by the Invention] However, with the above conventional equipments, where a manuscript is loaded on an installation base or a discharge base, in case ADF equipment is opened, the trouble of a manuscript sliding down from on an installation base or a discharge base, and falling to a back side seen from the tooth back, i.e., actuation direction, of image formation equipment arises. In order to prevent fall of the above manuscripts, it is necessary whether when opening ADF equipment, the manuscript is laid in the installation base or the discharge base, and to check in advance, and ADF equipment must be opened once it removes them, when the manuscript is laid. Therefore, operability is bad. Moreover, when two or more manuscripts have fallen, after picking up, the activity which arranges a manuscript is troublesome. The technique as shown in JP,5-116804,A in order to solve the above troubles for example, is proposed. If open actuation of the up half object of the body of image formation equipment is detected, the original cover means which is also a send means of a manuscript carries out a pressure welding to the manuscript upper part, and he is trying to prevent fall of a manuscript here. However, with the above configurations, since the pressure welding and estrangement device of an original cover means are needed separately and a detection means to detect disconnection of a body etc. is needed, components mark will increase, a device will also be complicated and cost will start. Moreover, in that by which the installation base and discharge base of the above manuscripts are established in one, the weight of the whole ADF equipment became heavy and it also had the trouble that a load was applied to an operator on the occasion of a closing motion activity.

[Means for Solving the Problem] The sheet member transport device concerning this invention was prepared in the upper part of an image formation equipment body, is equipment which conveys a sheet member and is equipped with the installation base, the conveyance device, and the safety catch device. An installation base is prepared free [closing motion] to the body of image formation equipment, and lays a sheet member. A conveyance device conveys the sheet member laid in the installation base. Where an installation base is closed, it evacuates so that conveyance of a sheet member may not be barred, and a safety catch device prevents that a sheet member falls from an installation base with open actuation of an installation base, where an installation base is opened wide. According to this equipment, since fall of the sheet member on an installation base is prevented with open actuation of an installation base, a user does not need to remove a sheet member in the case of disconnection of an installation base. In this sheet member transport device, it is desirable to enable independently closing motion of an installation base with a conveyance device. In this sheet member transport device, it is desirable that the safety catch device has a revolving shaft, a safety catch member, an energization member, and specification-part material. The revolving shaft is supported by the conveyance direction downstream edge of an installation base free [rotation]. The safety catch member is pivotable with a revolving shaft, and the 1st location which can contact the edge of the sheet member laid in the installation base, and the 2nd location which does not contact the edge of a sheet member can be taken. An energization member energizes a safety catch member to the 1st location side. Specification-part material locates a safety catch member in the 2nd location, where an installation base is closed. In this sheet member transport device, the safety catch device may be further equipped with the rotatable rotation member with the revolving shaft and the safety catch member. An energization member is what energizes a safety catch member to the 1st location side by energizing a rotation member. In this case, specification-part material It is desirable that it is the contact member which locates said safety catch member in said 2nd location in contact with said rotation member where it was prepared in the top face of an image formation equipment body and an installation base is closed. In this sheet member transport device, when the image reading means is formed in the upper part of the body of image formation equipment, the contact member is prepared in locations other than an image reading means, and it is desirable to have the contact section which contacts a rotation member in the condition that the installation base was closed, and the ramp which makes rotation actuation of a rotation member smooth in contact with a rotation member in connection with the switching action of an installation base. In this sheet member transport device, it

is desirable that the stowage which contains the safety catch member of the 2nd location is formed in the conveyance direction downstream edge of an installation base. As for a conveyance device, in this sheet member transport device, it is desirable to have the feeder style and the discharge device. A feeder style supplies the sheet member laid on the installation base to the location corresponding to the image reading means of the body of image formation equipment. A discharge device discharges the sheet member in which the image was read with the image reading means on an installation base. The image formation equipment concerning this invention is equipped with the body of image formation equipment, and the manuscript transport device. Image formation equipment has an image reading means to read the image of a manuscript, the transfer paper conveyance device in which a transfer paper is conveyed, and the image formation section formed in the transfer paper which has had the image read with the image reading means conveyed inside. The manuscript transport device is prepared in the upper part of the body of image formation equipment, and is equipped with the installation base, the conveyance device, and the safety catch device. An installation base is prepared free [closing motion] to the body of image formation equipment, and lays a manuscript. A conveyance device conveys the manuscript laid in the installation base. A safety catch device is evacuated so that conveyance of a manuscript may not be barred, where an installation base is closed, and where an installation base is opened wide, a manuscript prevents falling from an installation base with open actuation of an installation base. As for a conveyance device, in this image formation equipment, it is [an installation base] desirable that can open and close independently freely. Moreover, in this image formation equipment, it is desirable that the safety catch device has a revolving shaft, a safety catch member, an energization member, and specification-part material. The revolving shaft is supported by the conveyance direction downstream edge of an installation base free [rotation]. The safety catch member is pivotable with a revolving shaft, and the 1st location which can contact the edge of the manuscript laid in the installation base, and the 2nd location which does not contact the edge of a manuscript can be taken. An energization member energizes a safety catch member to the 1st location side. Specification-part material locates a safety catch member in the 2nd location, where an installation base is closed.

[Embodiment of the Invention] Hereafter, it explains with reference to the drawing of attachment of 1 operation gestalt of this invention. First, the image formation equipment which drawing 1 is the whole image formation equipment perspective view which has ADF equipment as a sheet member transport device by 1 operation gestalt of this invention, and was shown here is a compound machine having a copy function and a facsimile function. Moreover, drawing 2 is the cross-section block diagram of the image formation equipment shown in drawing 1 . In these drawings, image formation equipment 1 has body 1a and ADF equipment 1b arranged in the upper part of Body 1a. Body 1a consists of the image formation section 4 equipped with the image reading means 2, the optical unit 3, and the photo conductor drum 41, and a transfer paper conveyance device 5. The control panel 6 is arranged in the near side (drawing 2 right-hand side) of body 1a up external surface. Moreover, in the upper part of body 1a, it applies to the pars intermedia of the depth direction of Body 1a from a near side, and the transfer paper discharge section 7 is formed. The telephone 8 for transmitting and receiving the image of a manuscript between external facsimile is attached to the flank of body 1a. In addition, since this image formation equipment 1 is what usually performs copy activity of a manuscript, and transmission of facsimile by the side in which the control panel 6 of body 1a was arranged, it calls the side which counters the side in which the control panel 6 was arranged a near side and the side in which the call and the control panel 6 were arranged a back side. Moreover, the 1st contact glass 11 is formed in the crowning of body 1a, it is the crowning of body 1a further, and the 2nd contact glass 12 is formed in the back side rather than the 1st contact glass 11. The 1st contact glass 11 is arranged to the quiescence manuscript reading field. Here, a quiescence manuscript reading field is a field which reads the image of a manuscript by scanning the below-mentioned scanner 22 which constitutes the image reading means 2 to the stationary manuscript. In addition, when a manuscript is laid on the 1st contact glass 11, a manuscript is detected by the manuscript detection sensor S1, and a detection signal is outputted. Moreover, the 2nd contact glass 12 is arranged to the migration manuscript reading field. A migration manuscript reading field is a field which reads the image of a manuscript by moving a manuscript to the stationary scanner 22. ADF equipment 1b has the installation base 13 of a manuscript, and the conveyance device 14 in

which a manuscript is conveyed. The installation base 13 was arranged above the 1st contact glass 11, and has covered the 11th page of the 1st contact glass possible [closing motion]. Moreover, the safety catch device of this invention is applied to this installation base 13. The conveyance device 14 is arranged above the 2nd contact glass 12. The installation base 13 has the crevice formed in the top-face side, and this crevice is the discharge section 17 which receives the manuscript discharged from the conveyance device 14. The conveyance device 14 is equipped with the manuscript insertion opening 141 which carries out opening to a near side, the manuscript exhaust port 142, and the manuscript conveyance section 143. It is located under the manuscript insertion opening 141, and is located more nearly up than the discharge section 17 while carrying out opening of the manuscript exhaust port 142 to an equipment near side like the manuscript insertion opening 141. The manuscript conveyance section 143 turns to a back side the manuscript inserted in the manuscript insertion opening 141, incorporates it, after that, reverses the conveyance direction in the mid-position, and is conveyed to the manuscript exhaust port 142 of a near side. The manuscript installation section 144 is formed in the near side of the manuscript insertion opening 141. The manuscript installation section 144 is arranged above the installation base 13, and is attached in the base material 131 of the pair which projected in the opposite location by the side of the back of the installation base 13 (the depth direction of space) up, and was prepared in it at one. It applies to the manuscript conveyance section 143 from the conveyance direction upstream at the downstream. Forward space roller 143a, feed roller 143b and 1st conveyance roller pair 143c (roller 143c' --) Roller 143c", 143d (roller 143d', roller 143d") of 2nd conveyance roller pair, and discharge roller pair (3rd conveyance roller pair) 143e (roller 143e', roller 143e") are ****(ed) in order. Moreover, it is arranged, where it sold and roller 143f is energized at the feed roller 143b side. 1st conveyance roller pair 143c, 143d of 2nd conveyance roller pair, and discharge roller pair 143e consist of a driving roller and a follower roller, respectively. The driving roller of forward space roller 143a, feed roller 143b, and 1st conveyance roller pair 143c, the 2nd driving roller of a conveyance roller pair, and the driving roller of discharge roller pair 143e rotate in the direction which turns a manuscript to the downstream by the drive of a drive motor M1, respectively, and is conveyed. Moreover, since the torque which the manuscript which sells, is equipped with the torque limiter roller 143f, sells with feed roller 143b, and passes through for roller pair 143f sells only in the case of one sheet, and requires it for roller 143f is large, it follows to feed roller 143b. Since the torque which sells and starts roller 143f is small when two or more manuscripts which sell with feed roller 143b and pass through for roller pair 143f have lapped, a torque limiter acts and it will be in the condition of rotation impossible. Consequently, it sells with a manuscript, and since the frictional force of manuscripts is smaller than roller 143f frictional force, only the manuscript of the maximum upper layer is conveyed by the downstream by feed roller 143b. The manuscript detection sensors S2 and S3 are arranged in the location near the upstream of feed roller 143b, and the 2nd location near the downstream of 143d of conveyance roller pairs by the manuscript conveyance section 143, respectively. If the manuscript loaded by turning an image formation side up is laid in the manuscript installation section 144 by this and it is pushed even into the location near the upstream of feed roller 143b, the manuscript detection sensor S2 detects existence of a manuscript, a drive motor M1 will drive according to the indication signal given after that, and one manuscript will be conveyed at a time by the downstream. If the tip location of the conveyed manuscript arrives at the location near the downstream which is 143d of 2nd conveyance roller pair, the manuscript detection sensor S3 will detect it, and control by which reading of an image with the scanner 22 later mentioned with this detection signal when the tip location of a manuscript reaches the 2nd contact glass 12 is started will be performed. Then, when the back end location of a manuscript finishes passing the 2nd contact glass 12, control which reading of an image with a scanner 22 ends is performed. The manuscript which reading of an image ended is a manuscript by discharge roller pair 143e. It is conveyed by the exhaust port 142. The manuscript laid in the manuscript installation section 144 is conveyed by the downstream one by one, while the manuscript detection sensor S2 is 0 N. In addition, when a manuscript passes 143d of 2nd conveyance roller pair, the vertical side is reversed, when it arrives at the location of the 2nd contact glass 12, an image formation side counters with the 12th page of the 2nd contact glass, and reading of an image of it becomes possible. Moreover, the manuscript conveyed by the manuscript exhaust port 142 is discharged by the discharge section 17, turns an

image formation side down, and **** loading is carried out above. Consequently, when collecting manuscripts from the discharge section 17, the manuscript is in the condition that the laminating was carried out in the same sequence as the beginning. Moreover, the installation base 13 has the arm 132 of the pair formed in the opposite location by the side of back (the depth direction of space) by extending at the back side, as shown in drawing 3. On the other hand, the upstream guide 145 which has axis 145a which projects in a longitudinal direction as shown in drawing 1 and drawing 2 is formed in the body 1a side, and the tip side of the arm 132 of a pair is supported by axis 145a of the upstream guide 145 rotatable. Thereby, when the near side of the installation base 13 is raised, as the alternate long and short dash line of drawing 5 shows, the installation base 13 uses axis 145a as the supporting point, is lifted up with the manuscript installation section 144, and will be in the condition that the manuscript installation side of the 1st contact glass 11 was opened wide. Moreover, if the force of lifting the installation base 13 up is canceled, the installation base 13 uses axis 145a as the supporting point, descends by self-weight, and will be in the condition of having covered the manuscript installation side of the 1st contact glass 11. the guide rail 21 with which the image reading means 2 was arranged along with the flank of the 1st and 2nd contact glass 11 and 12 as shown in drawing 1 and drawing 2, and a guide rail 21 -- meeting -- between a near side and back sides -- a round trip -- it consists of scanners 22 arranged movable. The scanner 22 is equipped with the light source 221 which consists of LED which irradiates the image side of a manuscript, the read station 222 which consists of CCD etc., and the mirror 223 which leads a manuscript image to a read station 222, and is usually standing by at the home position which is the mid-position of the 1st contact glass 11 and the 2nd contact glass 12. Here, if a manuscript is laid on the 1st contact glass 11, existence of a manuscript will be detected by the manuscript detection sensor S1, a drive motor M2 will drive according to the indication signal given after that, and, thereby, a scanner 22 will once move from a home position to the tip location of the manuscript by the side of a control panel 6. And next, the light source 221 is turned on, and a scanner 22 moves to a back side from the near side which is the tip location of a manuscript, scans the image side of a manuscript, and reads an image for every line. After predetermined data processing is performed, this read image data is changed into a digital signal, and is stored in the memory of ****. After reading of a manuscript image is completed, the light source 221 is switched off and a scanner 22 returns to a home position. Moreover, if a manuscript is laid in manuscript ***** 144, a manuscript will be detected by the manuscript detection sensor S2, a drive motor M2 will drive according to the indication signal given after that, and, thereby, a scanner 22 will be moved to the location of the 2nd contact glass 12 from a home position. And when a manuscript is conveyed according to the conveyance device 14 and it passes through the 2nd contact glass 12 top, as for a scanner 22, a manuscript image is read for every line. This read image data is used as the memory of **** account 100 million like the above. In addition, before reading the image of a manuscript, the light is switched on, and the light source 221 is switched off after reading. Moreover, termination of conveyance of all the manuscripts laid in the manuscript installation section 144 returns a scanner 22 to a home position. Thus, in the location of the 2nd contact glass 12, since a scanner 22 reads a manuscript image in the condition of having stood it still, the transit time of the scanner [as / in the 1st contact glass 11] 22 can be reduced, and it becomes possible to increase the amount of reading of the unit time amount of an image. The optical unit 3 is arranged under the transfer paper discharge section 7, and exposes the manuscript image read with the scanner 22 read from memory, or the image transmitted from the facsimile of the exterior read from memory on the photo conductor drum 41. This optical unit 3 is equipped with the light-emitting part 31 which changes and outputs the unbalance signal generated based on image data to laser light, and the reflective mirror 32 which turns the laser light from a light-emitting part 31 to the photo conductor drum 41, and is reflected. Moreover, each configuration member of the optical unit 3 is attached in housing 33, is constituted in one with housing 33, and where this housing 33 is fixed to the body frame in body 1a with the means of a screw stop etc., it is arranged in body 1a. In accordance with the peripheral surface of the photo conductor drum 41, as for the image formation section 4, the cleaning section 44 is arranged [the upper part] at the back side of the development section 43 and the electrification machine 42 at the near side of the electrification machine 42 and the electrification machine 42. The photo conductor drum 41 rotates in the direction of an arrow head by the drive of a drive motor M3, and an electrification field is formed on the

peripheral surface in the electrification machine 42 and the location which counters. An electrostatic latent image is formed in this electrostatic field of the laser light outputted from the optical unit 3, and an electrostatic latent image is developed by the toner image in the development section 43 and the location which counters. The imprint roller 45 is arranged under the photo conductor drum 41, and the toner image on the photo conductor drum 41 is imprinted by the transfer paper in the location which counters the imprint roller 45. Furthermore, the toner which remains on the circumferential front face of the photo conductor drum 41 is removed in the cleaning section 44 of the hand-of-cut downstream, and the location which counters. Each configuration member of the image formation section 4 is attached in housing 46, and is constituted in one with housing 46, and the body frame of **** in body 1a is equipped with this housing 46 free [attachment and detachment]. And covering 48 is formed in the near side of the image formation section 4 of body 1a, and covering 48 can be opened by using the axis 481 of the body 1a lower limit section as the supporting point and closed to a near side. Thereby, covering 48 can be opened and the image formation section 4 can be taken out now to the exterior of Body 1a. It is formed in the lower part of body 1a, and the transfer paper conveyance device 5 is feed skein. It has the TTO loading section 52, the feed section 53, and the transfer paper conveyance way 54. moreover, the resist roller pair in which this transfer paper conveyance device 5 was arranged along the transfer paper conveyance way 54 -- 55, the fixing section 56, and a conveyance roller pair -- it has 57 and discharge roller pair 58. It is loaded with the sheet paper cassette 51 by which the laminating of the transfer paper P was carried out, and the sheet paper cassette loading section 52 was contained. The feed section 53 has the feed roller 531, and the transfer paper P in the sheet paper cassette 51 with which the sheet paper cassette loading section 52 was loaded with this feed roller 531 is sent out from a near side. The transfer paper conveyance way 54 is for leading the transfer paper pulled out from the sheet paper cassette 51 to the transfer paper discharge section 7 via the photo conductor drum 41. The back side lower part became the rotation supporting point, and the sheet paper cassette 51 equips the interior with the transfer paper installation base 512 where the near side was energized up with the spring 511, and the guide 513 to which the transfer paper pulled out with the feed roller 531 is led to the transfer paper conveyance way 54. And from the near side of body 1a, this sheet paper cassette 51 is made to slide to the sheet paper cassette loading section 52, and it equips with it. Moreover, if a sheet paper cassette 51 is pulled to a near side when a jam is generated in the time of supplying a transfer paper, or the feed roller 531 neighborhood, it can be pulled out to the exterior of body 1a. In addition, the guide 513 is formed in the curve configuration from which the transfer paper installation base 512 side serves as a concave in order to lead a transfer paper to the upper transfer paper conveyance way 54. Moreover, two or more rib 513a is prepared in the contact surface side with the transfer paper of a guide 513 at the predetermined spacing along the conveyance direction, and thereby, it is constituted so that a transfer paper can convey smoothly. **** for the feed section 53 to prevent the double feed of a transfer paper other than the feed roller 531 -- selling -- a pawl -- it sells, a roller etc. sells and it has the means. while the feed roller 531 is the upper part of a sheet paper cassette 52 and being arranged in the location from this side -- the clutch of **** -- minding -- the drive of a drive motor M3 -- the direction of an arrow head -- rotating -- a resist roller pair -- a transfer paper is conveyed to 55. The transfer paper conveyance way 54 The transfer paper pulled out by the near side of a sheet paper cassette 51 is reversed to a back side. Between the photo conductor drum 41 and the imprint roller 45 The front [the 1st imprint] guide 541 with which it feeds And the front [the 2nd imprint] guide 542, the after [an imprint] guide 543 which feeds the fixing section 56 by the side of back with the transfer paper by which the image was imprinted on the photo conductor drum 41, and the 1st reversal guide 544 which the transfer paper which passed the fixing section 56 is reversed in the conveyance direction, and is discharged in the transfer paper discharge section 7 of a near side And it has the 2nd reversal guide 545. It is formed by resin etc., two or more ribs are installed in the contact surface side with a transfer paper side by side at the predetermined spacing along the conveyance direction, and, thereby, a transfer paper can convey each guides 541 and 542,543,544,545 now smoothly. Resist roller pair 55 is arranged between the guide 541 before the 1st imprint, and the guide 542 before the 2nd imprint, and is driven by the drive of a drive motor M3 through the clutch of ****. Moreover, the formation and the synchronization of the electrostatic latent image to the photo conductor drum 41 by the optical unit 3 are taken, and it feeds with a transfer paper between

the photo conductor drum 41 and the imprint roller 45. And if it finishes feeding with a transfer paper by one sheet, a clutch will be canceled and a drive will be stopped. Transfer paper sensor S4 is arranged just before this resist roller pair 55, and if the point of a transfer paper is detected, the drive of the feed roller 531 will be stopped after predetermined time. Moreover, the fixing section 56 consists of the heat roller 561 located up and the ** roller 562 located caudad, and is arranged between the guide 543 after an imprint, and the 1st reversal guide 544. The heat roller 561 equips the interior with the heater, and the pressure welding of the ** roller 562 is carried out to this heat roller 561 side with predetermined spring pressure. And while fixing a toner image to the transfer paper conveyed among both rollers, the transfer paper with which it was fixed to the toner image is conveyed to the 1st reversal guide 544 side. moreover, a conveyance roller pair -- 57 is arranged between the 1st reversal guide 544 and the 2nd reversal guide 545 -- having -- a discharge roller pair -- 58 is located in the termination location of the 2nd reversal guide 545. moreover, method ** of conveyance of the 2nd reversal guide 545 -- the transfer paper sensor S5 is mostly arranged in the mid-position, and the abnormalities in conveyance of a transfer paper are detected. The display 66 to which a control panel 6 can check by looking the function which the user set up while the start switch 61, the mode selection key 62 which chooses copy mode and a facsimile transmitting mode, expansion/contraction key 63, a ten key 64, and the other function keys 65 formed so that a user could set various functions as arbitration are arranged is arranged. Actuation of the image formation equipment constituted as mentioned above is explained below. First, if copy mode or a facsimile transmitting mode is chosen by the mode selection key 62 of a control panel 6 and a manuscript is laid in the manuscript installation section 144, that will be detected by the manuscript detection sensor. And a manuscript is conveyed on the 2nd contact glass 12 according to the conveyance device 14 by start switching [61] off a control panel 6. At this time, the image of a manuscript is read with the scanner 22 which moved to the location of the 2nd contact glass 12 from the home position, and the read manuscript image is used as memory account 100 million. The manuscript which reading of an image ended is discharged by the discharge section 17. Although the manuscript by which copy or facsimile transmission is carried out was filed like books, as for the case, the manuscript is directly laid on the 1st contact glass 11. Then, it is detected by the manuscript detection sensor S1, by turning on the start switch 61, with a scanner 22, the image side of a manuscript is scanned and an image is read. The read image is memorized by memory. Moreover, when the image has been transmitted through the telephone line from external facsimile, the signal is detected, it is automatically set as the receive mode, and the image data which received is memorized by memory. Moreover, at the time of a facsimile transmitting mode, the image data memorized by memory is read and it is transmitted to a phase hand's facsimile through the telephone line. Copy mode or a facsimile carrier At the time of ** mode, the image used as memory account 100 million is imprinted by the transfer paper, and is discharged by the transfer paper discharge section 7. That is, at the time of copy mode or the facsimile receive mode, the photo conductor drum 41 is charged with the electrification vessel 42, and an electrostatic latent image is formed by discharging the laser light according to the image data memorized by memory, and exposing the photo conductor drum 41. Subsequently, the toner supplied to the photo conductor drum 41 from the development section 43 adheres to an electrostatic latent image, and a toner image is formed. On the other hand, the transfer paper contained by the sheet paper cassette 51 is fed to resist roller pair 55 side through the guide 541 before the 1st imprint with the feed roller 531. moreover, this transfer paper -- formation of an electrostatic latent image -- synchronizing -- a resist roller pair -- it is conveyed by 55 through the guide 542 before the 2nd imprint in the gap of the photo conductor drum 41 and the imprint roller 45. Next, with the polarity of an electrostatic latent image, with the imprint roller 45 with which the electrical potential difference of reversed polarity was impressed, the toner image of the photo conductor drum 41 is imprinted by the transfer paper, after that, it dissociates from the photo conductor drum 41, and a transfer paper is conveyed by the fixing section 56 through the guide 543 after an imprint. This fixing section 56 is fixed to the toner image on a transfer paper. furthermore, the transfer paper with which it was fixed to the toner image -- a conveyance roller pair -- it is discharged by 57 and discharge roller pair 58 through the 1st reversal guide 544 and the 2nd reversal guide 545 at the transfer paper discharge section 7. Next, the example is explained about the concrete configuration of a safety catch device. Drawing 3 , drawing 4 , and drawing 5 show the example of a

safety catch device, and a to e of drawing 4 shows a motion of the safety catch device accompanying open actuation of ADF equipment with time. The safety catch device is equipped with a revolving shaft 133, one pair of contacted members (rotation member) 135 which fixed to the both ends of a revolving shaft 133, the spring 134 (energization means) which energizes each ***** member 135 in the direction (refer to drawing 5) of arrow-head B, and the safety catch member 137. A revolving shaft 133 penetrates the installation base 13, and, moreover, is supported pivotable. The contacted member 135 contacts at least one contact member 136 prepared in the frame part of the top face of an image formation equipment body shown in drawing 3 and drawing 5 . As shown in drawing 4 , the bottom in contact with the contact member 136 is formed in the shape of [loose] radii, and the contacted member 135 carries out **** rotation to the condition which shows in a from the condition shown in e of drawing 4 , in case ADF equipment 1b rotates from a horizontal position to an upper open position. Specifically, the contact member 136 consists of a part for a flat part with the top face parallel to the top face of an image formation equipment body, and a ramp toward which it inclines caudad loosely. When the closedown of the ADF equipment 1b is carried out to the top face of the body 1a of equipment, the contacted section 135 and the safety catch member 137 of the contact member 136 and a safety catch device are in physical relationship as shown in drawing 4 e. the inside of the stowage 201 of the concave configuration prepared in the installation base 13 at this time so that the safety catch member 137 might not check conveyance of a manuscript -- it is -- and the connection side edge section with the installation base 13 -- an Imperial edict -- it is desirable to constitute so that it may be contained in the eclipse ***** device 14 (drawing 3 , 5). Therefore, the safety catch member 137 hides in lower-roller 14X at the time of the horizontal position which conveys a manuscript, and a manuscript is discharged with Rollers 14Z and 14X. And if the installation base 13 begins to rotate up, the contacted member 135 will be smoothly rotated in the condition of having contacted in the direction of arrow-head B gradually shown in drawing 5 according to the energization force of a spring 134 with the ramp of contact member 136 top face. A revolving shaft 133 rotates in the direction of arrow-head B by rotation of this contacted member 135, and the safety catch member 137 currently further fixed to the same axle by rotation of a revolving shaft 133 is also rotated in the direction of arrow-head B. And from the condition contained in the stowage 201, it rotates to the operation location which acts on a manuscript, and the safety catch member 137 projects. As drawing 3 shows, the refraction section which supports this in contact with conveyance direction upstream one end the lower limit side of a manuscript when the installation base 13 is located in an open position that is, is prepared in the safety catch member 137. Therefore, when the installation base 13 is opened wide, it can prevent that a manuscript falls from the edge of the installation base 13 by this flexion. Next, after the installation base 13 was shut from the open position and has become a horizontal position, contrary to the time of disconnection, the contacted member 135 and the safety catch member 137 carry out sequential rotation towards the condition which shows in e from the condition shown in a of drawing 4 . That is, the lower part of the contacted member 135 contacts the top face of the contact member 136 by the side of the body of equipment, and it rotates against the energization force of a spring 134. Since the ramp is loosely prepared in the top face at the contact member 136 as point ** was carried out, husks eclipse ***** rotates along the inclined plane smoothly in the lower part of the contacted member 135. And the revolving shaft 133 which the contacted member has fixed also rotates with rotation actuation of this contacted member 135. Thereby, it rotates, and the safety catch member 137 is contained in a stowage 201, and does not become the obstacle of manuscript discharge of the safety catch member 137. Although the contact member in this example is a configuration which consists of a flat part and a ramp, especially the configuration of a contact member is not limited to this. You may be the thing of the shape of circular [loose] or a hemicycle, and rotation actuation of a contacted member should just be performed smoothly and appropriately. Moreover, this contact member may make the location specification-part material holding the gap for enabling conveyance of a manuscript appropriately between the top-face section of body of equipment 1a, and ADF equipment 1b serve a double purpose. Moreover, the revolving shaft which prepared the safety catch member also in the manuscript installation section 144 side may be arranged so that it may link to rotation actuation of the safety catch device by the side of the installation base 13, and you may make it the configuration which can prevent fall of the manuscript before image reading with

rotation actuation of an installation base. Moreover, although what formed the transfer paper discharge section 7 which discharges a transfer paper in the body of image formation equipment in this invention is raised as one example By preparing separately the transfer paper conveyance way which can be conveyed towards the equipment upper part, and not carrying out current use of the ADF equipment, when it is detected by the detection sensor that the manuscript is not loaded, the installation base 13 and the manuscript installation section 144 You may constitute so that a transfer paper can be discharged by a user's selection to up to the installation base 13 or the manuscript installation section 144, and the ejection of a transfer paper and a check by looking of a condition are easy to carry out and are convenient in this case.

[Effect of the Invention] As mentioned above, since the safety catch device in which fall of a sheet member can be certainly prevented with a easier configuration is offered according to this invention, the workability improves in the equipment which has a breaker style, and it becomes possible to be cheap and to offer reliable equipment. In addition, since it has the breaker style which can open and close only a sheet installation base, the burden to the user at the time of closing motion can be mitigated, and it becomes possible to also attain reinforcement of the breaker style itself.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The whole image formation equipment perspective view which has the sheet transport device which applied the safety catch device and this concerning one example of the invention in this application.

[Drawing 2] The internal configuration Fig. of the image formation equipment which has the sheet transport device shown in drawing 1.

[Drawing 3] The side elevation showing the switching action of the sheet installation base in the sheet transport device shown in drawing 1.

[Drawing 4] The Fig. of the safety catch member in this invention of operation.

[Drawing 5] The important section perspective view showing the configuration of the safety catch device in this invention.

[Drawing 6] A side elevation to show rotation actuation of the safety catch device in this invention.

[Drawing 7] Image formation equipment equipped with the sheet transport device which shows the conventional technique in this invention.

[Description of Notations]

1a : Body of image formation equipment

1b : ADF equipment

13 : Installation Base

14 : Conveyance Device

144 : Manuscript Installation Section

17 : Manuscript Discharge Section

131 : Base material

133 : Revolving Shaft

134 : Spring

135 : Contacted Member

136 : Contact Member

137 : Safety Catch Member

200 : Manuscript

201 : Stowage of Concave Configuration

[Translation done.]

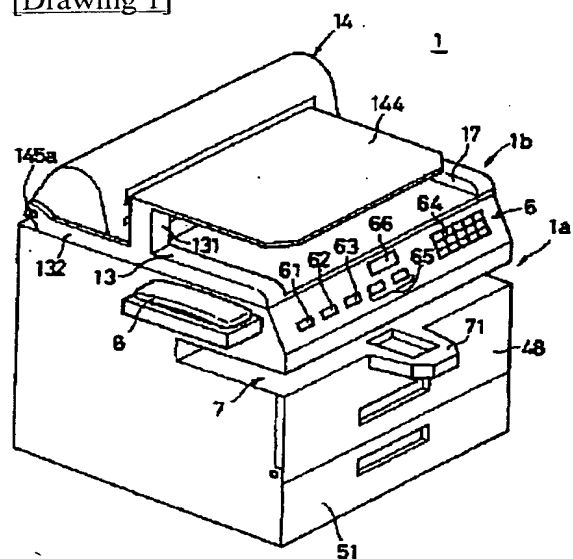
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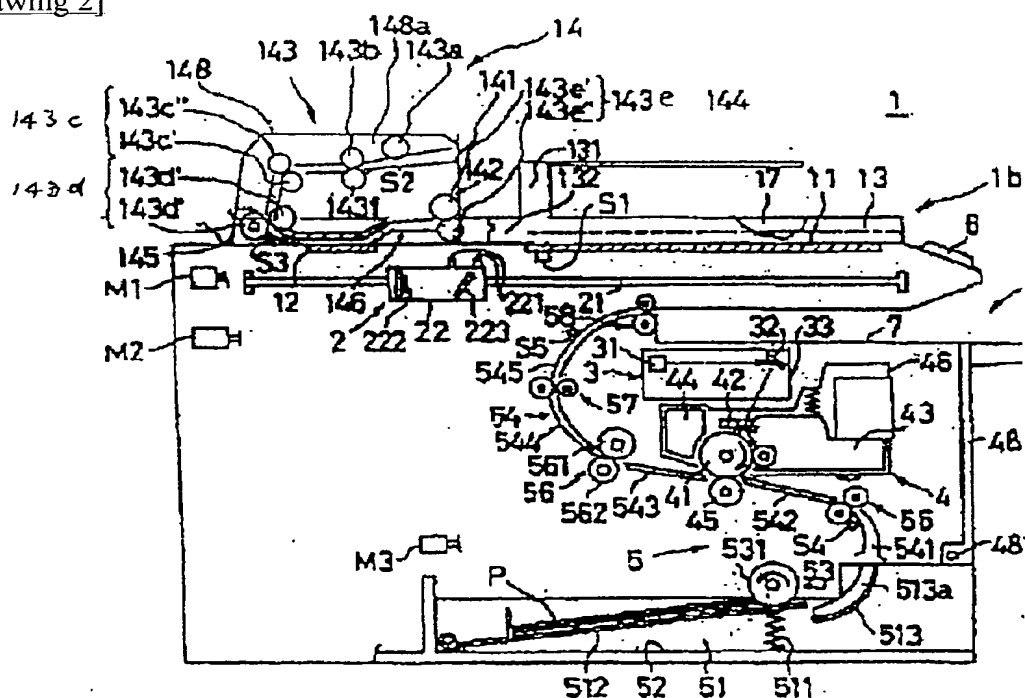
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DRAWINGS

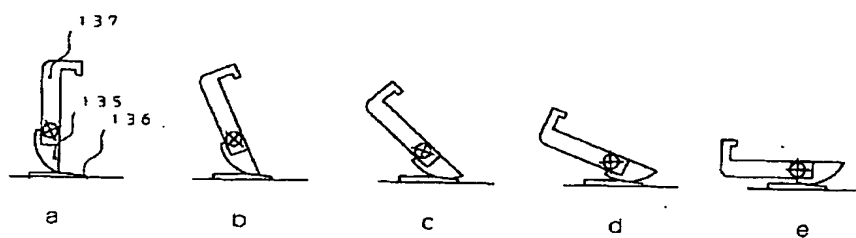
[Drawing 1]



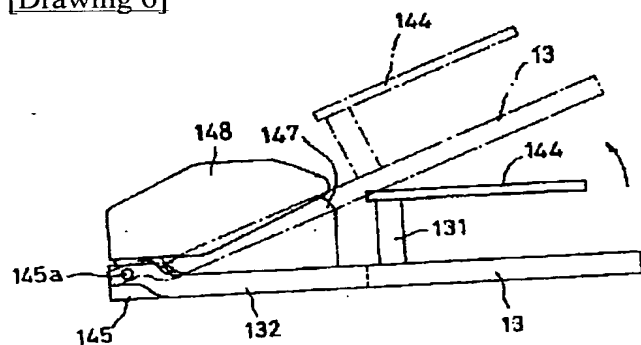
[Drawing 2]



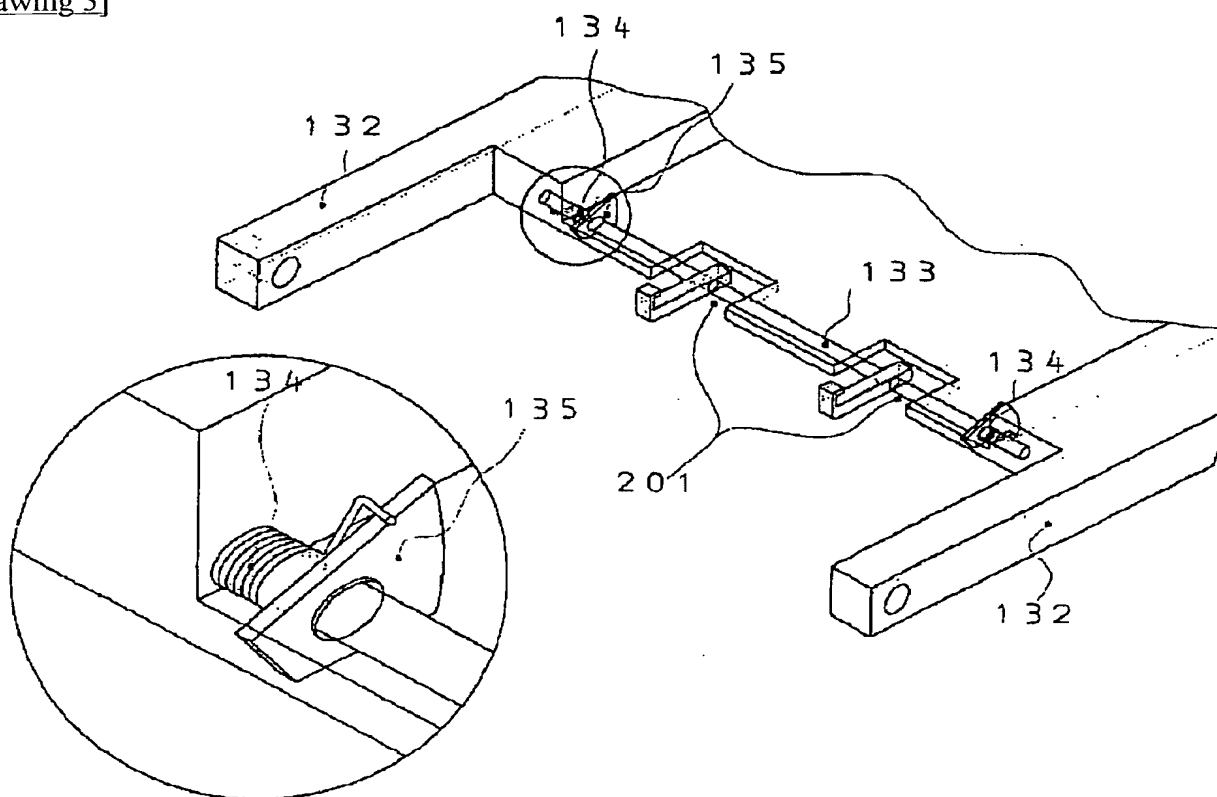
[Drawing 4]



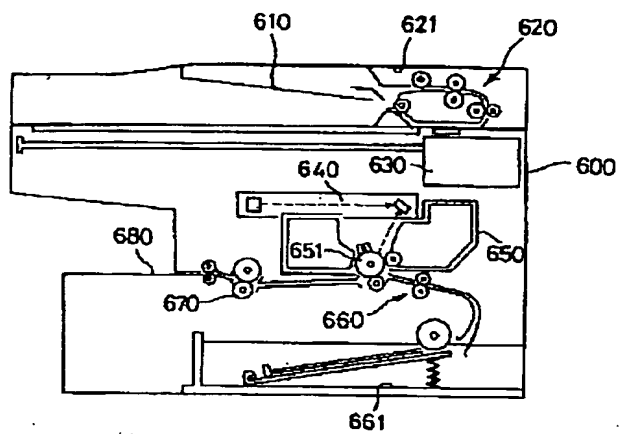
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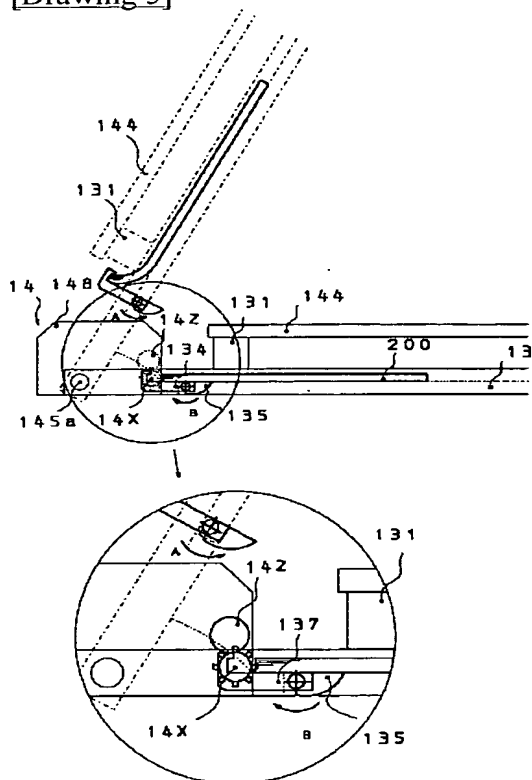
[Drawing 3]



[Drawing 7]



[Drawing 5]



[Translation done.]